Environment Agency Proposal

IEX Consultants Ltd.

Non-Technical Summary

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Prepared by / Date	DDH 18/02/23				
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1 Project Description

IEX Technologies Ltd (IEXTL) are a research, product and process development company based in the Wilton Centre, Redcar. IEXC specialise in developing products and processes for recovering precious metals from challenging organic and aqueous streams.

Based on successful trials completed in 2021-2023, IEXTL are seeking permission to operate a permanent waste treatment facility for the processing of precious metal containing aqueous and organic waste. The waste will be processed to recover the precious metals as part of the circular economy.

Two primary process routes will be considered for the processing of the waste:

1) Distillation and concentration of the waste materials to remove volatile components to produce a liquid concentrate that is suitable for transport offsite for precious metal refining.

2) Adsorption of the precious metals using ion exchange or scavenger material to immobilise the precious metals as a solid. The precious metals will bind onto the adsorbent materials and be filtered off to separate it from the bulk liquid waste material.

In all instances, sample of the waste will be evaluated in the onsite laboratory to identify the best processing route before the any bulk materials is received onsite.

The following provides a description of the waste material and detail of the proposed processing route that will be followed during the initial research campaign.

2 Description of Waste

2.1 Waste Type

The following waster types will be accepted onto site:

Waste Code	Description of Waste
16 08 01	Spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum.
16 08 06*	Spent liquids used as catalysts.
16 08 07*	Spent catalysts contaminated with hazardous substances.
16 10 01*	Aqueous liquid wastes containing hazardous substances.
16 10 02	Aqueous liquid wastes other than those mentioned in 16 10 01.
16 10 03*	Aqueous concentrates containing hazardous substances
16 10 04	Aqueous concentrates other than those mentioned in 16 10 03

2.2 Maximum Quantities to be Processed

- The total quantity to be treated is 250 tonnes/year.

2.3 Storage Methods

- A maximum of 10,000kg of unprocessed waste will be delivered and stored on site at a time.
- The waste will be delivered in 1000L IBCs or 55 gallon drums.

- The material will be stored in the containers it is delivered in until processing starts.

- The waste materials will be stored in a secure chemical store on the Wilton Site. The chemical store is within the security fence of the Wilton Site and is segregated from vehicle traffic to prevent damage to the storage containers. The chemical store has its own independent drain system that is isolated from the surface drainage system on the wider Wilton Site. This will prevent water contamination in the event of a chemical spill. Chemical spill kits and bunds will be available to contain any spillages.

2.4 Maximum Treatment Quantities

- 1,000-2,000 kg of waste will be processed each day. Five to ten batches will be run over 10 working days to complete processing of the 10,000kg of stored waste stated in Section 2.3. Once the full 10,000kg of stored waste has been processed, the process equipment will be shut down. A registered waste handling company will then be arranged to take the processed waste offsite. The next 10,000kg shipment of waste will then be arranged for delivery.

2.5 Maximum Storage Times

- The processed waste will be stored on site for a maximum of 90 days.

3 Technical Standards

3.1.1 HSE

HSG51- Storage of flammable liquids in containers

HSG140- Safe use and handling of flammable liquids

C736F- Containment systems for the prevention of pollution

HSG143- Designing and operating safe chemical reaction processes.

COSHH- Control of substances hazardous to health (Sixth edition)

3.1.2 Environment Agency

3.0 Waste pre-acceptance, acceptance and tracking appropriate measures

2.0 General management appropriate measures

5.3 Record keeping for all treatment residues

6.1 Point source emissions to air

8.1 Energy efficiency (installations only)

7.1 Emissions to air

6.5 Fugitive emissions to land and water

3.1.3 Other Technical Standards

S5.06 Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste

4 Environmental Risks

4.1 Highest Ranked Environmental Risks

1) Loss of waste containments leading to contamination of waste or land. This can occur during waste delivery, waste offloading, storage, transfer into the processing unit, processing itself, transfer back to storage, waste loading and transport offsite. This risk is mitigated through effective process design as per HSG143, safe containment of material as per C736F/HSG140 and adequate storage of material as per HSG51.
2) Fugitive emissions to air during processing. The most likely, although improbable, cause of this is failure of the emission control and ventilation system. This risk is mitigated through effective process design as per HSG143, adoption of Best Available Techniques (BAT) as per S5.06 and a recorded system of preventative maintenance and inspection.

4.2 Sensitive Receptors

The permitted location is 100m from the nearest office block and 1 km from the nearest residential site. It is situated within the Wilton Centre which is located within the boundary of the larger Wilton International site. This site is home to multiple large-scale chemicals, energy from waste and material processing facilities. As such, the size of the proposed processing activity is not expected to cause an additional burden on the local population with respect to noise, odour and environmental impact. Additionally, all processing operations will take place within existing buildings on the site which ensures all noise, odour and fugitive emissions will be controlled to not cause nuisance. There are no known sensitive, ecological or wildlife sites in the immediate area.

5 Additional Documentation

Refer to document IEXTL-EA-B2-5c for a detailed description of the processing operation and environmental risk assessment.